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BACKGROUND STATEMENT PREPARED BY
CANADIAN ARCTIC GAS PIPELINE ON
THE PROPOSED ALCAN PIPELINE SYSTEM

June/1976

SUMMARY:

A 1,700-mile pipeline to transport natural gas from the North Slope of Alaska by way of Fairbanks and along the general route of the Alcan highway into northeastern British Columbia and northwestern Alberta, has been proposed by Northwest Pipeline Corp., Westcoast Transmission and Alberta Gas Trunk Line Company.

This Alcan route (or Fairbanks corridor) is being promoted in conjunction with a separate 1,000-mile pipeline proposed by Foothills Pipe Lines Ltd. (Westcoast and AGTL) for the transportation of natural gas from the Mackenzie River Delta.

As compared with the Arctic Gas pipeline, which would move gas from both the Alaskan North Slope and the Mackenzie Delta through one pipeline, the separate Alcan and Foothills systems has major disadvantages. These include:

-- Unnecessary construction of an additional 1,300 miles of natural gas pipelines in northern Canada and Alaska.

-- Additional capital investment of some $3 billion to move the same volumes of natural gas to consumers in Canada and the United States, based on 1975 cost estimates. The additional required

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investment could be greater than this, including the result of delay and continued cost inflation.

-- An increase of more than $600 million per year in the cost of transporting northern Canadian and U.S. gas to their respective markets.

-- A lengthy and unnecessary delay in the availability of presently discovered Delta reserves to meet Canadian needs. This would also affect Canada's present gas export commitments.

-- The prospect of greatly reduced northern Canadian petroleum exploration which could jeopardize the discovery and development of required new energy supplies at a time of critical Canadian need.

-- The prospect of increased unemployment in northern Canada, which would exacerbate present social and economic problems.

-- Deferment, and possible risk of loss, of oppportunity for northern native peoples to achieve objectives which they seek, and which may be secured by means of settlement of northern native land claims.

-- Increased environmental impacts as a result of construction of an additional 1,300 miles of northern pipelines plus greater environmental problems related to the Alcan pipeline route.

These summary conclusions are detailed in the following analysis.

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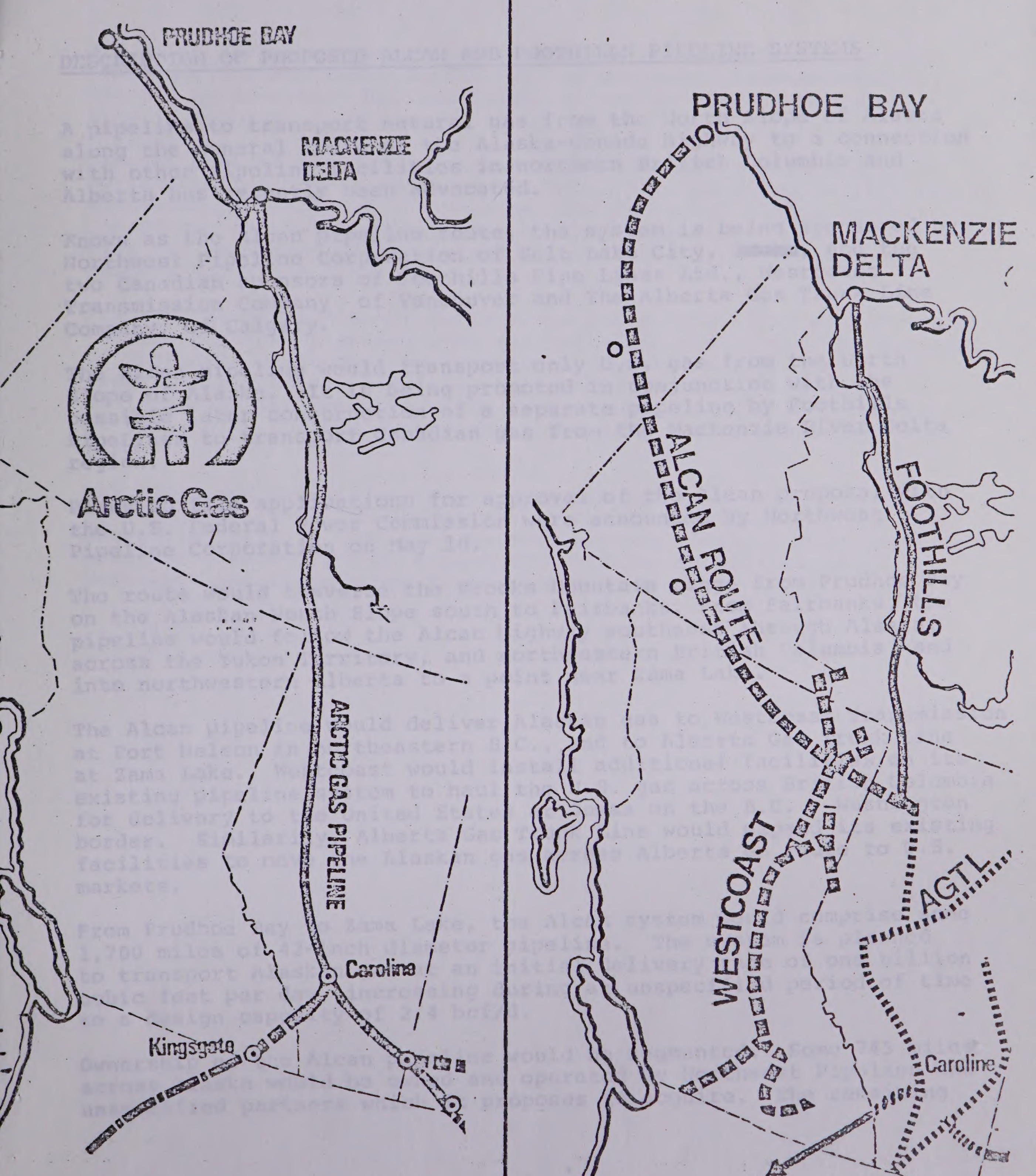

The Arctic Gas pipeline, shown at left, would move gas from both the Mackenzie Delta and Alaskan North Slope through one pipeline. The separate Alcan and Foothills pipelines to move Delta and North Slope gas would involve an additional 1,300 miles of pipeline at an extra cost of $3 billion.

DESCRIPTION OF PROPOSED ALCAN AND FOOTHILLS PIPELINE SYSTEMS

A pipeline to transport natural gas from the North Slope of Alaska along the general route of the Alaska-Canada highway to a connection with other pipeline facilities in northern British Columbia and Alberta has recently been advocated.

Known as the Alcan pipeline route, the system is being sponsored by Northwest Pipeline Corporation of Salt Lake City, [redacted], and the two Canadian sponsors of Foothills Pipe Lines Ltd., Westcoast Transmission Company of Vancouver and The Alberta Gas Trunk Line Company, of Calgary.

The Alcan pipeline would transport only U.S. gas from the North Slope of Alaska. It is being promoted in conjunction with the possible later construction of a separate pipeline by Foothills PipeLines to transport Canadian gas from the Mackenzie River Delta region.

Plans to file applications for approval of the Alcan proposal with the U.S. Federal Power Commission were announced by Northwest Pipeline Corporation on May 10.

The route would traverse the Brooks Mountain range from Prudhoe Bay on the Alaskan North Slope south to Fairbanks. From Fairbanks, the pipeline would follow the Alcan highway southeast through Alaska, across the Yukon Territory, and northeastern British Columbia, and into northwestern Alberta to a point near Zama Lake.

The Alcan pipeline would deliver Alaskan gas to Westcoast Transmission at Fort Nelson in northeastern B.C., and to Alberta Gas Trunk Line at Zama Lake. Westcoast would install additional facilities on its existing pipeline system to haul the U.S. gas across British Columbia for delivery to the United States at Sumas on the B.C. - Washington border. Similarily, Alberta Gas Trunk Line would expand its existing facilities to move the Alaskan gas across Alberta en route to U.S. markets.

From Prudhoe Bay to Zama Lake, the Alcan system would comprise some 1,700 miles of 42-inch diameter pipeline. The system is planned to transport Alaskan gas at an initial delivery rate of one billion cubic feet per day, increasing during an unspecified period of time to a design capacity of 2.4 bcf/d.

Ownership of the Alcan pipeline would be segmented. Some 745 miles across Alaska would be owned and operated by Northwest Pipeline and unspecified partners which it proposes to acquire. The remaining

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970 miles across northern Canada would be owned by Foothills Pipe Lines (across the Yukon Territory), by Westcoast Transmission (across northeastern British Columbia) and by Alberta Gas Trunk Line in Alberta.

Capital cost of the 745 miles across Alaska has been estimated by Northwest Pipeline at approximately $2.3 billion based on 1975 costs. Estimated capital cost of the remaining 970 miles across northern Canada has not yet been reported by the sponsors, nor has the estimated cost for expansion of the existing facilities of Westcoast and Alberta Gas Trunk Line.

Transportation of Alaskan North Slope gas by the Alcan system would require a second pipeline down the Mackenzie Valley for the movement of Mackenzie Delta gas, as proposed by Foothills PipeLines. Excluding field supply laterals, this would involve 1,000 miles of 42-inch pipeline from the Delta to a connection with AGTL facilities at Zama, plus further expansion of the AGTL system downstream from Zama.

The Alcan and Foothills systems combined would involve more than 2,700 miles of 42-inch diameter pipeline from Prudhoe Bay and the Mackenzie Delta to Zama Lake in northeastern Alberta, plus additional pipeline construction to expand the existing capacities of the Westcoast and Alberta Gas Trunk Line systems.

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THE ARCTIC GAS PIPELINE -- ONE SYSTEM FOR TWO SUPPLY SOURCES

Unlike the Alcan and Foothills proposals, the Arctic Gas system is designed to transport natural gas from both the Mackenzie Delta and the North Slope of Alaska through a single pipeline -- a distance of 1,400 miles to Zama Lake, compared with 2,700 miles for the Alcan and Foothills PipeLines. An additional 1,000 miles of the Arctic Gas pipeline south of Zama Lake would be required under either scheme. More than 2,000 miles of the Arctic Gas pipeline would be 48-inch diameter pipe.

Canadian gas transported through the Arctic Gas pipeline would be delivered to Westcoast Transmission at a point near the junction of the BC-Alberta-NWT borders for Westcoast's markets; and to Trans-Canada PipeLines at the Alberta-Saskatchewan border for Canadian markets east of Alberta. Alaskan gas transported by the Arctic Gas pipeline would be delivered to the Alberta Natural Gas Pipeline on the Alberta-B.C. border at Coleman for U.S. west coast markets; and to the proposed Northern Border Pipeline at Monchy on the Saskatchewan-Montana border for U.S. midwest and eastern markets.

The Arctic Gas pipeline is planned to handle an initial delivery volume of 3.25 bcf/d, including between 1 and 1.25 bcf/d Delta gas and between 2 and 2.25 bcf/d Alaskan North Slope gas. At full compressor horsepower, the 48-inch diameter mainline could handle a total supply of 4.5 bcf/d.

Detailed economic, engineering, environmental and northern regional socio-economic studies related to the Arctic Gas pipeline have been underway since 1968. Expenditures by Arctic Gas sponsors for these studies, for design engineering, construction planning and regulatory procedures, amounted to $100 million by the end of 1975.

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ARCTIC GAS ROUTE 1,300 MILES SHORTER

The route proposed for the Arctic Gas pipeline would minimize pipeline mileage required for the transportation of both Mackenzie Delta and Alaskan North Slope gas.

Miles of pipeline required to transport volumes of 2.25 bcf/d each from the Delta and the North Slope by means of the Arctic Gas pipeline, as compared with Alcan and Foothills systems, have been calculated using Zama Lake in northeastern Alberta as a common delivery point. South of Zama Lake, the distances to final market destinations are essentially the same. The comparative distances to Zama Lake are:

Alcan and Foothills routes	
Prudhoe Bay via Fairbanks to Zama Lake	1,715 miles
Mackenzie Delta to Zama Lake	1,005 miles
Total Alcan and Foothills	2,720 miles
Arctic Gas route	
Prudhoe Bay via Mackenzie Delta to Zama Lake	1,414 miles
Reduced pipeline mileage via Arctic Gas route	1,306 miles

For the movement of just Prudhoe Bay gas, the Alcan route is 280 miles longer than the route of the Arctic Gas pipeline. For the movement of both Prudhoe Bay and Delta gas, the Alcan and Foothills pipelines are 1,306 miles longer than the Arctic Gas system. Of the additional pipe required by the Alcan and Foothills systems, 550 miles would be in Alaska and 756 miles in Canada.

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TIMING IMPLICATIONS OF ALCAN AND FOOTHILLS SYSTEMS

The Alcan and Foothills systems would result in lengthy deferment of both Delta gas supplies for Canadian consumers and Alaskan gas supplies for U.S. consumers.

Arctic Gas filed applications with both the National Energy Board and the Federal Power Commission in March, 1974. The 26 months since then have been required for regulatory agency preparation and review of the extensive exhibits and studies supporting the applications, as well as for the actual hearings which are not yet completed. None of the preparatory work preceding the filing of the Arctic Gas applications, nor the regulatory process after filing, has been completed for the Alcan proposal. The prospects for substantial delay are clearly evident.

Because of the size of the projects, the Alcan and Foothills pipelines could not be built simultaneously. The Foothills pipeline would be unable to proceed until after completion of the Alcan pipeline.

The Foothills pipeline to transport Delta gas could proceed after completion of the Alcan pipeline only if the necessary volume of Delta reserves had been discovered by that time. The volume of reserves required to enable construction of the Foothills system is estimated at 16 to 18 trillion cubic feet. Reserves discovered to date in the Delta are in the order of seven trillion cubic feet.

Representatives of Gulf Interstate Engineering testified before the Federal Power Commission in Washington on May 26 on the scope of environmental and engineering work to support the application by Northwest Pipeline for the Alcan system. The Gulf Interstate representatives testified that their environmental studies in support of the application began on March 23, 1976 and were completed on April 14. They testified that the total cost of engineering and environmental work to be done for the FPC filing is projected at $820,000, of which $580,000 will be for engineering and $240,000 for environmental. By contrast, studies conducted for Arctic Gas have been underway for six years, at a cost of more than $15 million for environmental studies and more than $50 million for engineering.

Allowing for minimal engineering and environmental studies, regulatory review, final design engineering, detailed construction planning, supply procurement and delivery, and actual construction work, Arctic Gas does not believe that there is any realistic possibility that the Alcan system could be completed to carry Alaskan gas before 1984 or 1985.

This would mean that the Foothills system to deliver Delta gas could not be completed until at least one year later, assuming that adequate

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Delta gas reserves had been developed well before that time. But the development of these necessary reserves would be jeopardized by adoption of the Alcan-Foothills concept. Exploration incentive would be seriously eroded as a result of delay in return on exploration investment, uncertainty, and a smaller return because of higher transportation costs. The end result would be to seriously jeopardize the development of required new supplies of Canadian gas.

Canada has urgent need of its natural gas supplies from the Mackenzie Delta as soon as they can be made available. Without frontier gas or oil, Canada will have to pay for net oil imports amounting to some $5 billion annually by 1985 to meet its essential energy needs. Delta gas supplies can significant reduce that need for imported energy. In addition, the federal government's recent Energy Strategy for Canada noted that without frontier gas supplies "there is a prospect of natural gas shortages, if not in the late 1970's, then in the early to mid-1980's.

ALCAN-FOOTHILLS SYSTEMS WILL ADD BILLIONS OF DOLLARS TO COSTS

The Alcan and Foothills systems would result in an extra 1,300 miles of pipeline to transport the same volumes of Delta and North Slope gas to a common delivery point, as compared with the Arctic Gas pipeline. The additional cost of these extra facilities is estimated by Arctic Gas at some $3 billion, based on 1975 costs. This would be additional cost for which there would be no economic benefit. This additional investment required for the Alcan and Foothills pipelines would increase the cost of transportation by more than $600 million per year.

Evidence to the effect that the Alcan-Foothills systems are economically unfeasible has already been presented before the Federal Power Commission and U.S. Congressional hearings.

Results of studies by the FPC economic and engineering staff, evaluating the economic, financial and overall feasibility of Alcan route for the movement of North Slope gas, was presented before the FPC by staff members David C. Lathom and James M. Kiely, Jr., on April 27.

Lathom testified that "if a Fairbanks alternative... is considered in conjunction with a complete initial Maple Leaf (Foothills) Project, the economic, financial and overall consequences are overwhelmingly negative, when compared with the other bilateral or international project; in other words the Arctic Gas project."

Lathom testified that he and Kiely each looked "at different aspects of what would be entailed and individually arrived at the same conclusion. Subsequent events and the passage of time have served to reinforce our initial conclusion in this regard."

Lathom concluded that "we could not advocate or support a Fairbanks (Alcan) alternative. Our studies led us to believe that it was unwise and unrealistic to mount a major feasibility of this alternative and thereby commit a significant portion of staff's limited resources on an alternative that showed minimal prospects of bearing fruit. This was a combined judgement made in conjunction with staff counsel."

Kiely testified: "It was my conclusion that economically the Fairbanks-Alcan route was not a viable alternative to the Arctic Gas project in view of the impact it would have upon Canada."

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Cost of transporting Delta gas by the Foothills pipeline could be further increased as a result of delay and continued inflation.

Further evidence of increased transportation costs by the Alcan route was presented to a joint meeting of the U.S. Senate committees on Commerce and Interior and Insular Affaris in Washington March 25 by Leonard Ross, Commissioner, California Public Utilities Commission. Mr. Ross testified: "In the event the Fairbanks corridor is chosen, it is possible either choice, El Paso or the Arctic route in the Fairbanks corridor, would price the gas out of any reasonable market in the United States... our staff estimates that the 1982 cost, assuming a seven percent rate of inflation... might well approach $6.00 (per mcf) for either the El Paso system, or the Arctic system in the Fairbanks corridor. At that point I think the feasibility of the whole project comes into question."

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ARCTIC GAS ROUTE WOULD HAVE LESS ENVIRONMENTAL IMPACT

The Federal Power Commission's Environmental Impact Statement, filed in April, concluded that "the Arctic Gas proposal is environmentally preferable to the El Paso Alaska proposal." But it also concluded that the Alcan route would be environmentally preferable to the route proposed by Arctic Gas.

However, the FPC's staff environmental preference for the Alcan route for the movement of Alaskan North Slope gas did not include consideration of the additional pipeline facilities that would then be ultimately required for the movement of Mackenzie Delta gas.

When the additional 1,300 miles of northern pipeline involved in both the Alcan and Foothills systems are considered, there is no doubt that the environmental effects will be greater than that of the shorter and less expensive Arctic Gas system. The FPC environmental staff has concurred with this in testimony before the FPC subsequent to the release of the Environmental impact statement.

But even for the movement of just Alaskan North Slope gas, the conclusion that the Alcan route would be environmentally preferable is challenged by independent environmental consultants engaged by Arctic Gas.

Evidence on the Alcan route was presented to a U.S. House of Representatives sub-committee hearing in Washington by environmental experts testifying on behalf of Arctic Gas on May 19.

The testimony was presented by Dr. Peter McCart, of Calgary; Dr. William Gunn, Environmental Research Associates, Toronto; Ronald Jakimchuk, Renewable Resources Consulting Services Ltd., Edmonton; Donald Dabbs, Northern Engineering Services, Calgary; Dr. R. G. Gossen, Manager of Environmental Studies, Arctic Gas; and R. A. Hemstock, Director of Environmental Studies, Arctic Gas.

The conclusions stated by this panel were based on more than six years of intensive environmental studies which they and others have conducted for Arctic Gas.

In their prepared testimony, these witnesses stated that "the proposed Arctic Gas route along the Arctic Coast and along the Mackenzie River Valley, is preferred to the Fairbanks corridor by the mammal, fish, vegetation, socio-economic and geotechnical consultants, as well as from an overall environmental standpoint."

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The panel testified that there are eight reasons why the Arctic Gas route is environmentally preferable to the Fairbanks-Alcan highway route:

1) Shorter distance.

2) The Arctic Gas route "will traverse a relatively homogenous physiographic unit, and will, therefore, not affect multiple terrain types, each of which presents its own complex network of environmental problems."

3) The coastal route "is easier to construct and rehabilitation of disturbance is simpler, from a geotechnical and terrain standpoint.

4) "The Fairbanks corridor would require summer construction, and thus, a greater degree of contact with fish and wildlife."

5) While the "Fairbanks corridor gives the superficial appearance of following disturbed areas... (it) would stray great distances from previously disturbed areas."

6) "The Fairbanks corridor presents significantly more seismic risk that the proposed coastal route."

7) In the likely event that gas reserves are discovered on the Alaskan North Slope east of Prudhoe Bay, additional pipelines would be required to connect these reserves if the Alcan route were followed. The end result would be the establishment of pipelines along virtually the entire route now proposed by Arctic Gas as well as the 1,700-mile Alcan system.

8) "More blasting and grading would be required for the Fairbanks route... with resultant increased disturbance to wildlife and habitat destruction."

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NORTHERN SOCIO-ECONOMIC EFFECTS

Northwest Pipeline has stated that the proposed Alcan pipeline route "avoids the uncertainties regarding the Canadian native claims settlement issue."

The Alcan route, however, includes some 400 miles across the south-western Yukon Territory where the land claims of northern native peoples have not yet been settled.

The Alcan route, morever, could significantly reduce present northern employment, thereby exacertating existing social and economic problems, and reduce opportunities northern native peoples to benefit from and participate in northern resources development.

Nearly 900 northern residents -- most of them native peoples -- are employed directly by the petroleum industry, while indirect employment resulting from the industry's northern exploration activity is much greater. This constitutes a major employment factor in northern Canada. The prospect of reduced northern petroleum exploration if the Arctic Gas pipeline does not proceed, has already been noted. The resultant impact on northern employment could be severe.

Because the Alcan route would not transport any Canadian resources, it would provide northern native peoples with no opportunity to share in resource revenues or participate in development. The Foothills system would defer and diminish such opportunities, while emposing a burden of greater unemployment in the north.

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